

Claim 1        A solar collector panel for heating air comprising :

         a container with a bottom panel, two vertically folded primary end panels, two vertically folded primary side panels and an open top,

         a heat conducting absorber plate with a heat absorbing surface substantially the same width as the bottom panel and a length less than the bottom panel

         a plurality of secondary inner end panels bondably attached to said end panels, each having an air distribution plenum chamber facing inward,

         a plurality of secondary inner side panels bondably attached to said side panels, each of said secondary side panels having folded projections to longitudinally support said absorber plate.

         a secondary two-part bottom panel longitudinally folded to form at least one vertical absorber plate support parallel to the centerline of the collector and bondably attached to the bottom panel,

         a transparent cover

         a plurality of apertures in the end panels for air inlet and outlet conduit connectors.

Claim 2        The collector of claim 1 wherein the container includes a non-conducting composite structure comprising an intermediate corrugated portion interspersed between non-corrugated outer pieces.

Claim 3        The collector of claim 1 overwrapped in waterproof film wherein said inlet and outlet conduits puncture the film and penetrate said apertures to force film segments inwardly on the outside of the conduits.

Claim 4        The collector of claim 1 wherein the primary end panels have tab extensions folded upward about the side folding line before being folded 90 degrees about the end fold line and adhesively attached to the side panels to form an open container.

Claim 5 The collector of claim 1 wherein said secondary two-piece end panels include plenums with vertical air distributor slots on the inside of said plenum.

Claim 6 The collector of claim 1 wherein said side panel supports are aligned vertically with the upper surface of one or more supports extending upward from the bottom panel.

Claim 7 The collector of claim 1 wherein the absorber plate includes space between the absorber ends and respective end panels.

Claim 8 The collector of claim 1 including an air passage above and below the absorber plate.

Claim 9 In the collector of claim 1 wherein the absorber plate is supported by inwardly folded portions of the side panel and positioned for air flow above and below said absorber plate from air inlet to air outlet of the collector.

Claim 10 The collector of claim 9 wherein the absorber plate is bondably held in position above said side supports.

Claim 11 The collector of claim 1 wherein the inner secondary end and side panels are contiguous extensions of the primary end and side panels and are folded inside the container.

Claim 12 In the collector of claim 11 wherein secondary panels extended from each end include a plurality of apertures and are folded inside each end to form an air distributing plenum for incoming and exiting air.

Claim 13 In a collector of claim 12 wherein said inside wall of said plenum includes an even number of apertures located symmetrically about the horizontal centerline of the collector.

Claim 14      In the collector of claim 11 wherein a folded portion of at least one tertiary panel extension of a secondary side panel is bonded to the primary bottom panel and includes a folded support under the absorber plate.

Claim 15      In the collector of claim 1 wherein the container is closed with a top cover having end and side extensions

Claim 16      In the collector of claim 1 wherein the collector is overwrapped in transparent film.